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Paulownia tomentosa. Reproduced from photograph of tree in New York Botanical Garden, taken in Feb. 1922.

JOURNAL

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PAULOWNIA IN WINTER

WITH PLATES 267 AND 268

Paulownia tomentosa or *P. imperialis*, under each of which names it is known, is a conspicuous tree at all seasons, especially in spring, by reason of the panicles of purple, fragrant, trumpet-shaped flowers that are in full bloom before the appearance of the leaves, and in summer, when the broad, velvety leaves have reached their full size[1]. Later, in autumn, the clusters of ovate seed pods stand out prominently in connection with the naked branches, so that throughout the entire period of seasonal growth some one striking feature is always apparent. During winter, also, when flowers, leaves, and most of the seed-pods have disappeared, it is still conspicuous among all other deciduous trees in this region because of its erect, branching, terminal panicles of velvety-brown flowers buds, often a foot or more in length, that can hardly fail to attract the attention of even a causal observer.

These winter-bud panicles, which are actually formed late in the preceding summer, are particularly interesting because they are not contracted into single, closely compacted, winter buds, such as we are familiar with in connection with nearly all of the trees and shrubs in this latitude, as in the lilac for example (Plate 268, fig. 2), which expand in the following spring and

[1] The leaves, more particularly those borne upon saplings and young vigorous shoots, are larger than those of any other species of tree in this latitude and are strikingly suggestive of tropical foliage. A beautiful example of a tree showing this character, growing a short distance southeast of the museum building, was described and figured in the *Journal* for January 1907.

gradually develop into flowering panicles. The winter-bud stage of *Paulownia* is represented by a fully developed panicle (Plate 268, Fig. 1), of which each individual embryo flower consists of an adequately protected bud, so that the entire panicle is prepared to burst at once into full blossom when the proper time arrives. The interesting significance of this character is that, superficially at least, it appears to represent a tropical habit of growth that has adapted itself to winter conditions, and may be inferred to represent a modified ancestral character that is a relic of some time in the past when the genus probably flourished under tropical or semi-tropical conditions. Incidentally also, this inference is strengthened by reason of the fact that the tree is able to live in localities where the winter temperature frequently kills the flower buds. In other words the weakest feature of the tree, under cold climatic conditions, is the apparently tropical habit of its inflorescence. The fact that the flowers do not bloom until relatively late in the season, in the latter part of April and early in May, when warm or mild weather is practically assured, would also seem to favor the idea of a warm-climate ancestry.

Another interesting and significant fact is that *Paulownia*, formerly regarded as belonging to the Scrophulariaceae or Figwort family, is now accredited to the Bignoniaceae or Trumpet-creeper family with its 500 or more species that are almost all restricted in their distribution to tropical regions. The only species of the family that occur in our region, other than *Paulownia*, are the Trumpet Vine (*Bignonia radicans*), and the Smoking Bean or *Catalpa* tree; but it is doubtful if either of these is indigenous as far north as the latitude of New York.

Very little is known about the origin or geologic history of *Paulownia*. Only one fossil species, *P. Europaea*, based entirely upon imperfect remains of leaves, is recorded in paleobotanical literature. This species was found in France, in deposits of late Tertiary (Pliocene) age; but as to its previous ancestry, or the former extent of the geographic distribution of the genus, there are, as yet, no available paleontologic records. In Europe it was evidently exterminated by the ice and cold of the Glacial epoch, but it maintained its existence in Eastern Asia, where it is an element in the native flora of that region.

Fig. 1. Expanded winter-bed panicle of *Paulownia*.
Fig. 2 Contracted winter-bud panicles of lilac.
Both are slightly and proportionaly reduced in size. The specimens from which the figures were made were gathered Jan. 24, 1922.

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Elsewhere throughout the world it is represented only by trees that have been introduced and by some that have escaped from cultivation.

ARTHUR HOLLICK

CHRYSANTHEMUMS FOR EVERYBODY

At this season of the year when leaves are falling everywhere, when the tender flowers have succumbed to the early frost, when all vegetation heralds the approach of winter and the general aspect of things is suggestive of the dying year, comes the Chrysanthemum. It bursts forth in all its lavish beauty, coming as a glorious climax to wind up the floral year.[1]

It is an old and well known flower, but the Chrysanthemum of the past made its chief appeal to those who had greenhouses to give it the necessary shelter to bring the flowers to perfection.

In recent years great changes have been wrought and new types and varieties have been developed so that to-day we have real hardy Chrysanthemums which anybody who wishes to, in town or country, can grow in the garden. This is not a mere figure of speech, for as I rode up on an elevated train I saw glorious white, yellow, pink and crimson Chrysanthemums which had been planted in boxes in a small backyard in the heart of the city, truly a charming little floral oasis in a desert of dirt and disorder.

You can have a perfect riot of Chrysanthemums if you wish it, for a period of from six to eight weeks. Given the heart's desire, the rest is comparatively easy. The cost, too, is little. for young plants can be purchased at planting time in May, for about twenty cents each.

CULTURE—Let us start in imagination with such plants as you can procure from any reputable dealer. The month of May is a good time to plant them out. They will grow in any ordinary garden soil, but if the soil is poor, enrich it by adding some bone meal or pulverized sheep manure, which can be obtained from seedsmen in handy, small packages. About

[1] Abstract of lecture by Mr. Arthur Herrington, November 6, 1921, at the N. Y. Botanical Garden.

two weeks after planting, when the young plants have become established and started to grow, pinch or cut off the growing tip. This pinching tends to make the plants bushy, well branched and comparatively self-supporting. A second pinching may be given if the plants seem to be growing too tall, but do not pinch later than the last week in June.

FEEDING—If the plants indicate the need of a little stimulant by reason of poverty of soil they can be given liquid food. A tablespoonful of nitrate of soda dissolved in two gallons of water will work wonders, but do not apply it more than twice during the season. Sheep manure, too, may be spread on the ground and watered in.

PESTS & DISEASES—The one persistent but not serious pest, if taken in time, is Aphis or Green Fly. It invariably appears during the growing season. It must be killed by a contact poison and the best remedy is a Nicotine preparation such as "Black Leaf 40," applied as directed on the container, in a fine mist-spray which thoroughly wets the shoots and the insects on them. If you have no facilities for spraying then smother the shoots with tobacco dust. Mildew sometimes appears and is indicated by white patches on the leaves caused, usually, by lack of sufficient water. Under opposite conditions, such as a season of heavy rains and hot humid weather, leaf-spot, which causes the leaves to turn black and fall off, may become prevalent. Both of these can be checked and controlled by using Sulphide of Potassium or "Liver of Sulfur" dissolved, one ounce in two gallons of water and sprayed on the foliage. It can be obtained from any good chemist.

VARIETIES TO GROW—There are now in cultivation so many varieties of good outdoor Chrysanthemums that a dealer's list is bewildering to the beginner, so the following selection is given as a help.

Early flowering kinds which commence to bloom in September.

White.....Smith's Advance
Yellow.....Cranfordia
Pink.....Charles Jolly
Bronze .....A. Barham

Pompons, Large-flowered

Pink.....Lilian Doty

White.....White Doty
Yellow .....Connie Dick
Bronze .....Anna Moran

Pompons, small-flowered

Light pink...Little Gem
Deep pink...Rose Trevenna
Yellow.....Zenobia and the Baby
Bronze .....Mrs Frank Wilcox

Single-flowered Varieties

Pink.....Mrs. Buckingham & Kitty Riches
Very early
White.....Mensa
Yellow.....Golden Mensa
Bronze .....Glorianna and Ida Schiff

CONFERENCE NOTES FOR JANUARY.

At the conference of the scientific staff and registered students of the Garden on January 4th, reports were given by Dr. M. A. Howe and Professor R. A. Harper of the meetings of the A. A. A. S. at Toronto. Dr. N. L. Britton then displayed specimens of a "witches broom" from a plant of *Opuntia Dillenii* recently sent from Bermuda by Professor H. H. Whetzel. The "broom" consists of slender elongated branches very different from the normal branches of the plant. The particular interest in this material is that the marvel for Bermuda of the Floridian *Opuntia Pes-Corvi*, collected by the Challenger Expedition, may have been based on similar specimens.

A. B. Stout
Secretary of the Conference

NOTES, NEWS AND COMMENT

At the meetings of the American Association for the Advancement of Science, the Botanical Society of America, and affiliated organizations, held in Toronto, December 27–30, 1921, the Garden was represented by Prof. R. A. Harper, Chairman of

the Scientific Directors, and Dr. Marshall A. Howe, Curator. In the joint session symposium on "The Utility of the Species Concept," Professor Harper discussed the subject "from the point of view of a morphologist." In the General Section of the Botanical Society of America, he presented a paper on "The Evolution of the Hymenium and the Classification of the Uredineae." In the absence of Dr. Millspaugh, Dr. Howe acted as chairman of the Systematic Section of the Botanical Society of America and also read a paper under the title of "Remarks on Fossil Coralline Algae from Trinidad, B. W. I." Following the annual "Dinner for all Botanists," held at the King Edward Hotel, Dr. Howe, in the unavoidable absence of Dr. N. L. Britton, the retiring President of the Botanical Society of America, presented "A Communication from the Retiring President." Dr. Britton's communication consisted essentially of his best wishes and his personal check for one thousand dollars "to be applied to any part of the work of the Society" deemed most necessary or desirable. Dr. and Mrs. Britton were unanimously elected Patrons of the Botanical Society of America. The total registered attendance at the Toronto meetings was somewhat more than eighteen hundred, of whom two hundred or more were botanists.

From the Office of Blister Rust Control of the Bureau of Plant Industry of the United States Department of Agriculture, the Garden has received a splendid exhibit of the white pine blister rust and illustrations of the methods employed for its control. The exhibit consists of four large hand colored photographs, specimens of the diseased plants and suitable, artistically printed labels. The white pine blister is one of our most dangerous introduced parasites and the Government is doing all in its power to warn the public of its danger and to show how to detect it and the best means to be employed for its control. The exhibit is installed in corner case (18) on the second floor of the museum building..

A letter recently received from Dr. A. Pulle, professor of systematic botany in the University of Utrecht, Holland, tells us that the University has come into possession of a second

botanical garden, presented by the heirs of the late August Janssen, who founded this garden in 1905 near his country residence about 15 kilometers from Utrecht. It is to be called "Cantons park" and already contains many important specimens of plants. Professor Pulle is director of the new garden, and we have sent him a complete set of *Bulletin of the New York Botanical Garden* as a contribution to the library, in exchange. Professor Went remains director of the older garden of the University.

Dr. N. L. Britton accompanied by Mrs. Britton and Miss M. S. Brown, left New York January 21st for Porto Rico, to be absent about ten weeks. They will make their headquarters at Coamo Springs and continue the botanical exploration of the island.

700 biology students from Morris High School visited the Garden on January 18, filling every seat in the large auditorium where public lectures are given. Mr. Inman addressed the pupils at 9:30 on the subject of "Forestry," using handsome lantern slides; and the various classes were shown through the conservatories by their own teachers and members of the Garden Staff.

About 20 young ladies from the Froebel League Training School, of Riverdale, made a special visit to the Garden on the afternoon of January 25, to study the classification of plants, and the methods of mounting, preserving, drawing, and investigating plant collections. They were guided through the various departments of the museum building by Miss Potter and a member of the Garden Staff.

Meteorology for January: The total precipitation for the month was 1.75 inches, of which 0.70 inches (seven inches by snow measurement) fell as snow. The maximum temperatures recorded for each week were as follows: *50° on the 5th*, 49° on the 9th, 45° on the 19th and 39° on the 29th. The minimum temperatures were: 7° on the 3rd, 16° on the 13th, 13° on the 23rd and *5° on the 26th.*

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MUSEUM AND HERBARIUM

184 specimens of flowering plants from Sable Islands. (By exchange with Harvard University.)

3 specimens of sedges from Long Island, New York. (Given by Mr. W. C. Ferguson.)

2 photographs of cacti. (By exchange with the U. S. National Museum.)

1 specimen of *Cynosurus echinatus* from Oregon. (Given by Mr. R. V. Bradshaw.)

120 specimens of flowerless plants from Africa and America. (By exchange with the U. S. National Museum.)

29 specimens of flowering plants from Staten Island, New York. (Given by Dr. A. Hollick.)

1 specimen of *Polygonum puritanorum* from Massachusetts. (By exchange with Harvard University.)

63 specimens of mosses from Haiti. (By exchange with the U. S. National Museum.)

1057 specimens of flowering and flowerless plants from British Guiana. (Given by the Department of Science and Agriculture of British Guiana.)

19 specimens of mosses from California. (By exchange with Mrs. C. C. Hall.)

13 specimens of mosses from Colombia. (Collected by Dr. H. H. Rusby and Dr. F. W. Pennell.)

254 specimens of mosses from Canada. (By exchange with the Missouri Botanical Garden.)

10 specimens of mosses from Pennsylvania and New Jersey. (By exchange with Mr. Edwin B. Bartram.)

59 specimens of mosses from Montana. (By exchange with the U. S. National Museum.)

1 specimen of moss from North Carolina. (By exchange with Mr. W. W. Diehl.)

21 specimens of mosses from French Guiana.)Collected by Mr. W. E. Broadway.)

1 specimen of *Hypocrella guarantica* from Porto Rico. (By exchange with Mr. C. E. Chardon.)

20 specimen of smuts from Idaho and Utah. (Given by Mr. Geo. Zundel.)

9 specimens of *Endothia* from various localities. (By exchange with Dr. C. L. Shear.)

8 types of species of *Russula* from Michigan. (Given by Professor C. H. Kauffman.)

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